Citrus Industry of Greece

FOREIGN AGRICULTURE REPORT NO. 129
FOREIGN AGRICULTURAL SERVICE
U. S. DEPARTMENT OF AGRICULTURE March 1966

Contents

Foreword

The association of Greece with the European Economic Community (EEC) places a new emphasis on the competitive aspects of this growing citrus industry.

In the fall of 1963, a survey was made of the Greek citrus industry; the findings are reported here for the information of the U.S. citrus industry in developing foreign markets for U.S. citrus and citrus products. Dispatches from U.S. Agricultural Attache John D. Motz have since been used to bring the report up to date.

Indebtedness is gratefully acknowledged to many representatives of the Greek government, citrus and citrus processing industries, and officials of citrus producers unions and of research institutions, whose assistance in preparing this report has been invaluable.

J. W. Stewart.

J. W. STEWART, *Director*
Fruit and Vegetable Division

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C., 20402 - Price 20 cents

Citrus Industry of Greece

BY: J.HENRY BURKE, FRUIT AND VEGETABLE DIVISION

Greek interest in citrus has been growing. Land planted in citrus early in this decade was about three times as large as in 1950. Present plantings of about 65,000 acres might reach 100,000 acres by 1975. Two-thirds of total production is in oranges, the remainder in lemons, tangerines, and the infrequently-met citron.

Most Greek citrus is produced under rather harsh conditions; all land used is under irrigation, and all citrus-producing areas but Crete are subject to frost damage. Much orange production is being upgraded; through top-working many trees are being transformed from common-seeded-orange to Navel orange production. Greece will some day be unique among citrus-producing countries as a predominantly Navel orange country.

Citrus is a new crop to many Greek growers and many have yet to master completely the skills of citriculture necessary to produce export-quality fruit.

The destination of most Greek citrus is the domestic market; however, about a third has been exported in recent seasons and about 15 percent (including dropped fruit) used for products.

In the 1963–64 season, Greece exported 827,000 boxes of oranges and 841,000 boxes of lemons. This was considerably below the record large exports of the preceding season when 1.7 million boxes of oranges and 1.0 million boxes of lemons moved into export. Frosts in January and February in 1963 and again in 1964 were responsible for this reduction in exports. Nearly all of this citrus is exported during the winter season—November–May. Eastern Europe and the USSR have been the major markets for both oranges and lemons.

Future exports are likely to follow the same pattern, since Greece has neither seasonal nor quality advantages over Mediterranean competitors. Most Greek citrus exports are expected to continue to go to Eastern European markets in spite of the advantage that membership in the European Economic Community (EEC) will give Greece in that market.

Greece has export lemons available for the Western European market; however, since these lemons are available only during the winter season, any increase in exports to Western Europe will have little effect on U.S. lemon exports, which are normally marketed more heavily during the summer.

In the same way, the 90-day winter orange export season gives very little competition to U.S.-produced oranges, which are never exported in volume during the Mediterranean season.

Since 1960, citrus processing facilities have been established in most Greek producing areas; however, brined citron peel has been an established product of many years standing. At the time of the author's visit, Greece exported citron peel, and citrus juices in concentrated, sweetened, and unsweetened form. However, orange juice produced from Navel oranges is unlikely to result in an economically competitive product, so that in future industrial orange juice seems likely to be the major export item.

Table 1.—CITRUS TREES: Estimated number planted in Greece by Province,[1] 1950 and 1961

Province	Lemon		Orange		Mandarin	
	1950	1961	1950	1961	1950	1961
	1,000 trees	*1,000 trees*	*1,000 trees*	*1,000 trees*	*1,000 trees*	*1,000 trees*
Central and Euboea	248	582	170	567	44	39
Peloponnesus [2]	624	3,089	1,563	4,272	227	502
Ionian Isles	99	153	235	296	12	18
Thessaly	12	12	88	124	7	17
Macedonia	2	5	1	10	—	—
Epirus (Arta)	24	120	741	2,533	14	40
Aegean Isles [3]	153	276	245	371	290	404
Crete (Chania)	95	187	702	1,887	138	278
Total	1,257	4,434	3,745	10,059	732	1,298

Province	Bitter Orange		Other [4]		Total	
	1950	1961	1950	1961	1950	1961
	1,000 trees	*1,000 trees*	*1,000 trees*	*1,000 trees*	*1,000 trees*	*1,000 trees*
Central and Euboea	21	11	2	7	483	1,206
Peloponnesus [2]	159	87	7	81	2,573	8,031
Ionian Isles	7	3	1	3	353	473
Thessaly	3	5	—	1	110	159
Macedonia	—	—	3	—	3	15
Epirus (Arta)	70	119	—	7	849	2,819
Aegean Isles [3]	29	18	5	8	717	1,077
Crete (Chania)	46	30	11	127	981	2,509
Total	335	274	29	234	6,069	16,289

[1] Greece has 11 provinces but Thrace is not included since plantings total only 1,000 trees. [2] Includes the orange areas at Nafplion and Sparti and the lemon areas of Patras, Aeghion, and Xylokastro. [3] Samos, Chios, Lesvos, and Lemnus. In this case, Cyclades and Dodecanese are also included. [4] Mostly citron. Source: Greek Government.

Plantings and production

Official Greek data indicate that citrus plantings increased from about 6 million trees in 1950 to about 16 million in 1961. The latter total includes 10 million orange, 4.4 million lemon, and 1.3 million tangerine trees. Many groves are planted at a density of 200 trees per acre, and some are mixed plantings. Total citrus plantings in 1963—according to trade sources—were estimated at 48,000 acres of oranges, 19,000 acres of lemons, and 8,000 acres of tangerines.

Field observations by the author indicated that about 70 to 75 percent of Greek plantings could be considered commercial and capable of producing some export-quality fruit. In 1963, at least 10,000 acres of citrus were not of bearing age. Therefore, of the 75,000 acres planted, about 65,000 acres were of bearing age and about 50,000 acres were commercial plantings capable of producing some export-quality fruit. The estimated bearing acreage of 65,000 acres in 1963 produced less than 10 million boxes of citrus, indicating an average yield of about 150 boxes per acre.

In view of the continuing new plantings by 1975, Greece could reach a potential of nearly 25 million citrus trees covering 120,000 acres. While the rate of recent plantings indicates a planted area of this size is possible, this seems to be an upper limit of the potential in Greece, where irrigated land is at a premium. As citrus production increases and returns to growers decline, some plans to make new plantings may be abandoned and some low-yielding groves may be replaced by more profitable crops. While a planted area of 120,000 acres of citrus may be possible by 1975, competition for land may result in a total citrus area of no more than 100,000 acres at that time.

In the 17-year period, 1948 to 1964, orange production in Greece increased from 1.7 million boxes to 9.3 million boxes, and lemon production from 815,000 boxes to 2.6 million boxes, but tangerine production remained at a level of about one-half to three-fourths million boxes a year.

Since 1948, the quality of production of tangerines and lemons has changed little, but that of the orange industry considerably. In 1948, nearly all production was in local non-blood seeded oranges, while by the time of the author's visit the seedless Washington Navel was an increasingly important part of production. In future, with a predominantly Navel orange industry, Greece will be unique in the citrus world.

New plantings indicate that Greek production of oranges and lemons will continue to increase in the near future, but the rate of increase is difficult to forecast. In some districts and during some seasons, tree-damaging frosts will restrict production. The ability of Greek citrus growers to solve cultural problems and attain

Table 2.—CITRUS: Greek production and exports, by variety, 1948-64

Year	Production [1]			Exports [2,3]			
	Oranges [2,3]	Tangerines	Lemons	Oranges	Tangerines	Total	Lemons
	1,000 boxes [4]	*1,000 boxes* [4]	*1,000 boxes* [5]	*1,000 boxes* [4]	*1,000 boxes* [4]	*1,000 boxes* [4]	*1,000 boxes* [5]
1948	1,710	513	815	96	(6)	96	(6)
1949	2,102	615	911	94	(6)	94	(6)
1950	2,180	636	864	370	(6)	370	(6)
1951	2,708	630	899	264	(6)	264	(6)
1952	3,096	693	1,085	238	(6)	238	(6)
1953	3,433	822	1,209	367	(6)	367	(6)
1954	3,924	857	1,207	301	(6)	301	108
1955	3,959	727	1,283	150	81	231	424
1956	4,106	925	1,366	612	159	771	365
1957	4,926	760	1,647	518	160	678	456
1958	5,855	898	1,707	599	192	791	517
1959	5,379	693	1,812	775	150	925	948
1960	5,962	742	2,308	657	153	810	787
1961	6,519	646	2,524	1,294	129	1,423	973
1962	6,710	520	2,635	1,742	96	1,838	1,111
1963	6,414	611	2,426	827	132	959	792
1964 [7]	9,322	783	2,562	[7]2,256	[7]139	[7]2,395	[8]1,201

[1] Crop year, November-October, shown in the year of bloom (i.e., 1948 crop year, 1948-49 harvest). [2] Stated in terms of crop year, November-October (1948 export year—1948-49 harvest). [3] Excluding bitter oranges. [4] 70 lb. each. [5] 76 lb. each. [6] Included in "oranges." [7] Seven months, November-May. [8] Eight months, October-May.

Source: Government of Greece, *Foreign Trade of Greece*, and *Agricultural Statistics of Greece.*

higher yields could have an even greater influence. At no time in the 1950–64 period did the average yield of either lemons or oranges reach a box of fruit per tree, and on the average, in most seasons, lemon yields were only half a box per tree.

In view of these problems, the growth of production is likely to be somewhat slower than extensive new plantings might indicate.

Peloponnesus

Corinth-Xylokastro—This district is important to the citrus industry, primarily for the production of lemons. In 1962–63, it produced about 870,000 boxes of lemons, 100,000 boxes of oranges, and 6,000 boxes of tangerines.

As in other parts of Greece, this area plans to expand plantings, particularly if additional water supplies can be developed.

There are three general types of lemons—Maglene, Karystini, and Polyphorus. These groups are of strains rather than individual varieties.

There are a few acres of Eureka lemons but the total production is as yet small.

In the Corinth district, groves are small and average less than 2 acres. Many groves are protected by cypress windbreaks. All groves are irrigated, usually between May and October, and the frequency of irrigation depends upon the soil type. On heavy soil, irrigation is necessary no more than once a month and may be less frequent; on light soil, perhaps it is needed only every three weeks.

Mal secco is the most important disease problem to the Corinthian lemon grower. The practical control is to prune away the affected branches and burn them.

The old orchards were mixed cultures with citrus interplanted with grapes, but the newer plantings tend to be solid plantings of citrus only.

While the quality of the lemons produced is said to be excellent, the many strains of lemons grown create a problem of differences in appearance of fruit and of attaining a uniform grade.

In a recent season, the Corinth-Xylokastro area exported about 580,000 boxes of lemons.

Aeghion-Patrai—The Province of Achaia, which surrounds the town of Patrai and extends some distance both north and south of the town, is primarily a lemon district. In 1962, it was estimated to contain 630,000 lemon trees, 100,000 orange trees, 12,000 tangerine trees, 6,000 bitter orange trees, and 35,000 citron trees.

In the 1962–63 season, the exports from this area were estimated at 400,000 boxes of lemons and about 80,000 boxes of oranges. The coast east of Patrai and Aeghion is utilized primarily for lemons and currants as commercial crops. These plantings have much the same appearance as the coastal lemon plantings of Sicily.

In the Aeghion district, trees grow vigorously and there are many new plantings. The area of trees under 7 years of age appeared to be at least equal to those over 10 years of age. The individual gardens are small and are cultivated both by tractors and animal-drawn plows. Most of the groves are plowed and it was observed that the cultivation was rather deep for orchards and that it was customary to plow up to the trunk of the tree.

Pest control in the area is not too effective and some infestations of scale pests were seen. The most important disease problem for lemons is mal secco. This fungus disease reduces production and yield since there is a constant loss of bearing surface. It also results in a continuing replanting program and this accounts for a part of the new acreage.

It is customary to irrigate this area about every 20 days during the summer and most of the water is obtained by pumping.

Lemons compete with currants for space and in some cases lemon trees have been planted in vineyards, probably indicating that the grower intended to remove the vineyards in the future. There

is some tendency to move vineyards to more inland hillside sites and use lower irrigated coastal area for lemon plantings.

The lemon varieties planted in this area have been selected because of their resistance to mal secco. The most important lemon variety, said to comprise about 50 percent of the planted area, is the Karastyni. The second most important lemon variety is the Maglene; this comprises about 20 to 30 percent of planted area.

This area seemingly has a very favorable climate for lemons, the trees are said to have their first bloom in March or April and most of the lemons are exported as winter fruit from November through April. For the domestic market, some lemons are picked later and there are some other blooms which produce out of season and summer lemons, but this crop is small by comparison.

This area is subject to frost and in January of 1963 some of the trees were partly defoliated. Some deadwood from frost damage was observed on the author's visit in August 1963. The frost of January 1963 also resulted in a reduced lemon crop for this area for the 1963–64 season.

There is also a wind hazard and cypress windbreaks are employed around several orchards. Many of the small groves are interplanted with vegetable crops.

The combined packing capacity of the exporter-owned packinghouses is probably about 500 to 750 tons of fruit per day.

Pylos-Patrai—This area embraces the entire west coast of the Peloponnesus. Here, there are scattered small plantings of mixed citrus—oranges, lemons and tangerines—wherever there has been sufficient water available to maintain cultivation. These groves are usually small and they are in varied condition.

The district between Amalias and Patrai contains frequent small plantings of citrus and there are indications that both lemon and orange plantings are being expanded.

It was also noted that there was dead wood in some of the lemon groves. This seemed to be the type of damage that one would expect from frost, probably in the cold winter of 1962–63.

It was also observed in 1963 that while expansion was going on, there were also small groves which had been abandoned, and the trees here were dying out. This apparently indicated that some growers had had indifferent success with producing citrus in this area. The abandonment of the groves may also indicate that sources of water failed.

Two irrigation projects were expected to increase considerably the area planted in citrus: one which would contain the water of the Pinios River and distribute it throughout the valley, and another for a dual-purpose dam on the Pyrros River, to be used for both hydroelectric power and irrigation, with increased resulting acreage of 50,000 or more.

The coastal area north of the latter district—between the Pyrros River and Patrai—has scattered plantings of citrus which are mostly lemons; however, this area is reported to be heavily infected with the fungus disease mal secco, which retards production.

In the 50 miles south of Patrai, most of the groves seen were less than 10 years of age, which indicates that while the area is small, increased production will be attained in the near future.

The varieties grown here are about the same as those in the Corinth district. About 60 percent of the lemons are said to be of the Maglene variety, and about 30 percent Karystini. There is also another lemon variety of small importance which is Diphoros and which has two blooms during the year.

Many of the groves seen were interplanted with olives and grapes. This applies particularly to young plantings. The situation on this northern coast is very similar to the eastern coast of Sicily since the mountains come quite close to the sea. There is only a short area near the ocean which is suitable for planting trees. Because of the limited land, there is some planting on terraces.

It was also noted in some of the groves that bud mites destroy some fruit. The major disease problem is mal secco.

One of the major cultural problems is the shortage of irrigation water since the mountains come close to the sea and when winter rain falls it runs quickly into the ocean. During the summertime, when water is needed, there is a shortage. Wells are being drilled by some growers to supplement the water supply. There are plans for some future development of water by placing dams on the mountain streams.

The lemon groves observed were vigorous and the fruit was of seemingly excellent quality and good shape. However, it was observed in the fall of 1963 a rather small crop was set because of frost damage the previous January. While frost occasionally does damage to blossoms and a little damage to trees, it is of minor importance in most seasons.

The picking of lemons begins as early as September, but these fruits are completely green and are placed in de-greening rooms where they are gassed to turn the fruit yellow. Lemons in the area obtain a natural color by October or November.

Nafplion—This is the second most important orange area in the Peloponnesus. Nafplion in 1962 had about 1.9 million orange trees (out of a Greek total of over 10 million) 220,000 lemon trees, and about 335,000 tangerine trees.

In the 1962–63 season, this district produced about 1.2 to 1.3 million boxes of oranges, 125,000 boxes of lemons, and 143,000 boxes of tangerines. There are many new plantings; some estimate that by 1970 it could produce 3 million boxes of oranges.

This is a new orange area in Greece and most trees have been planted in the last 20 years, with about 75 percent of the trees planted in the last 10 years. It is an area of predominantly young orchards, with most of those seen less than 7 years of age, indicating that a very rapid expansion of production is possible.

The old trees planted were primarily round-seeded oranges, but nearly all of the plantings in the last 7 years have been of Washington Navels.

It is estimated that in 1962 about one-half million trees in the area were planted under government assistance programs.

The oranges in this area are grown on an almost level plain on brown loam soil. All of the groves are irrigated, primarily by water pumped from a depth of about 90 feet. While some hand cultivation is used in some small groves, particularly the young ones interplanted with vegetable crops, the primary means of cultivation is by garden-type tractors. These tractors are used for multiple purposes; in the field they are used to run tillage tools, but they are also used to pull wagons and carts on the road.

The groves observed in the area were vigorous, dark green with heavy foliage and large leaves. It is an area favorable to citrus, seemingly with little or no frost hazard, and quite similar to that of Gandia in Spain.

The most important disease problem of oranges seems to be Phytopthora, which may affect the roots in some cases, but also affects fruit on the lower part of the tree. The most important pests are the Mediterranean fruit fly and the mealy bug. Scales are controlled with two sprays, one in late June or early July and another in September. The usual spray is oil mixed with a toxic material.

It would seem that this new industry at present has few cultural problems. A scattering of minor element deficiency was seen in foliage, but the general condition of trees was excellent.

Sparta—This is one of the oldest citrus districts of the Peloponnesus and still, in 1963, the second largest orange-producing area in Greece. The total planted area of oranges in 1962—of bearing and non-bearing trees together—was indicated as 1.1 million trees, out of a Greek total of over 10 million. The total planted area was estimated at 6,000 acres, and total orange production 945,000 boxes out of Greece's total of 6.7 million.

This is a changing area in which most of the trees over 10 years of age are common seeded oranges and, as in Nafplion, most of the new plantings are in Navel oranges. As Navel oranges come into production in the next few years, their output will probably exceed that of common oranges.

Sparta is very different from Nafplion in that it contains many old trees over 30 years of age, which are large and densely planted. It is also characteristic in Sparta that many of the groves are

mixed cultures. Even some of the new plantings being made are mixed plantings; some of the groves being planted on higher elevations are in newly irrigated land planted in olives. One of the major factors in stimulating the expansion of the planted area has been the development of electric power which is now available for the operation of irrigation pumps.

Trade sources indicate that about 50 percent of the planted area at the time of the author's visit was under 10 years of age. While this indicates a potential for very rapid expansion in future production, it is still much less than that of the Nafplion area.

The cultural practices in Sparta are somewhat different from those in Nafplion, but the trees are generally planted at a density of about 202 trees per acre. In this area, the soil is deep and light and the trees grow to large size and become crowded when they reach 15 years of age; some of them reach over 25 feet in height. It was observed that very little pruning seemed to be done except for the removal of dead wood. The general condition of the groves was excellent, the color of trees good, and the size of leaves excellent. Some minor soil element deficiencies were observed, but these seemed to be of minor consequence. It was also noticed that no serious scale problem existed, indicating that pest control measures are fairly adequate.

Because of the light soil, frequent irrigations are necessary. In some heavy soils, groves are irrigated only once a month, but in groves on lighter soil it is the general practice to irrigate every 2 weeks.

In this area, oranges bloom in April and May and Navels are harvested from November 15 to April 1.

The major pests are Mediterranean red scale, Mediterranean fruit fly, and red spider. While Phytophthora funguses are present and sprays of copper sulphate are used in the groves visited, no bark outbreaks of gummosis were observed.

This area is subject to some frost hazard. Every year, some light frost occurs in January and February; however, the trees are rarely damaged except in exposed groves.

The area has the use of cheap gravity water, and abundant water was still observed to be available in the river. The utilization of this gravity water, plus electric power for pumping at high elevation, indicates that a considerable additional expansion of citrus plantings is possible.

The average size of the orange groves in the Sparta area is about ½ acre to 1 acre.

This area is typical of many in Greece which have local citrus industries to serve local needs only. At present there is no indication of citrus acreage expansion, and it is likely that in the immediate future Kalamata will continue to furnish fresh fruit for local needs.

Arta

Arta is the leading orange producing area in Greece with output in the 1962–63 season of 1.9 million to 2.2 million boxes of common seeded oranges, and 472,000 boxes of Navel oranges, out of a national total of about 6 million. Because of the rapid expansion of the planted area, it is possible that 1970 production of oranges can reach 4 million boxes.

In 1963, local sources indicated that the planted area of Arta was about 5 million trees, or about one-half Greece's total. Orange orchards in Arta are planted about 160 to 200 trees per acre.

The planted area of oranges at Arta, by age of trees, when the author visited the province, was estimated by the Greek Ministry of Agriculture as follows:

Age:	Common oranges [1]	Navel Oranges	Total oranges
	Acres	*Acres*	*Acres*
1 to 5 years	346	2,842	3,188
6 to 10 years	1,038	2,471	3,509
Over 11 years	6,597	914	7,511
Total	7,981	6,227	14,208

[1] Includes other oranges, such as bloods and all other non-Navel trees, but is predominately common seeded orange called Kiona.

It is evident from the distribution of common and Navel orange plantings that in the next 10 years the production of Navels will at least equal the production of common oranges. In addition to new plantings, about 10,000 common seeded oranges were top-worked to Navels in 1963. In this manner, planting of common oranges will be reduced and Navel oranges increased.

It is also estimated that in the area immediately surrounding Arta about 200,000 new trees were planted in 1963.

Very large nurseries were observed. In 1963, budded orange trees in nurseries, not yet old enough to plant, totaled about 1½ million trees. There were larger quantities of seedling trees yet to be budded.

In the nurseries visited, all of the orange trees were budded about three feet from the ground. This requires that the tree be in the nursery for about three years before it is ready to be planted in the orchard. A few orchards are planted with seedling stock and the trees budded in place in the orchard.

The quality of the nursery trees in the Arta region seemed to be below that in other regions of the Peloponnesus, and considerably below the standards of most citrus exporting countries.

GREEK ORANGE ORCHARDS

Arta produces about one-third the nation's oranges. New plantings are predominantly Navel. Above, young orchard. Left, top-working of old common seeded orange trees to Navels reflects significant trend. Below, left, expert indicates point on tree where bud union takes place. Below, right, damaged trees show frost hazard to which Arta orchards are subject.

Left, a typical citron planting near Chania. Most Greek citron comes from Crete. Right, fruit being cut in half and brined in a small seaside plant. Since 1963, facilities have been available to candy citron peel, as well. The product, which can be exported, is sold as a confection or for bakery use.

In the deep sandy loam soil, trees grow to large sizes and some trees 75 years of age were observed. When they reach 30 or so years of age, they form a complete cover to the ground and begin to become crowded. The older orchards are very dense with the ground completely shaded.

Groves at Arta average about 2 acres, with a few as large as 4 acres, and a very few as large as 20. Most of the groves are operated by families and cultivation is carried out both by small tractors and by animals—oxen, mules or horses. Cultivation is often done by plowing, which turns the soil deeper than would be done with a disc harrow. It is possible that this deep cultivation may damage surface roots. It is also worth noting that the plowing is done very close to the tree trunk.

Arta has unusual irrigation practices, in that a part of the grove is irrigated and a part unirrigated because of high water tables. In the areas with high water table, the problem of growers is not to irrigate but to have adequate drainage to keep the soil moisture condition at a desirable level. Drainage systems are being installed.

The Arta region is served by two rivers, the Arakhthos and the Louros. There was abundant water in both rivers; thus, water supplies are available for any foreseeable expansion of the irrigated area.

When irrigated, groves are completely flooded, often several rows of trees at one time without borders or ridges separating the rows. It would seem that water is used lavishly.

Some fertilization is practiced but many growers try to withhold

fertilizer in an effort to obtain thinner skin fruit or better quality demanded by the Greek domestic trade. This also reduces costs. In the orchards observed most of the trees were vigorous and had heavy large foliage, and even some trees 50 years of age were bearing satisfactory crops; however, some minor element deficiency was noted in foliage.

In a few groves, red scale was prevalent, indicating that pest control measures are not always effective.

Phythophthora is the major disease problem for trees and fruit, but it is not a serious one.

Pruning is an important cultural practice at Arta. While the trees may be shaped somewhat, the primary use of pruning is to remove dead wood. There is an abnormal amount of dead wood to be removed, due to the frost damage which occurs from time to time. In 1963, when the author visited Arta, trees in some areas still had dead wood, a result of frost damage early in the year. It was estimated that pruners could handle only about 7 trees per day and that the cost of removing this dead wood might be as high as 600 drachmas per strema ($81 per acre).

There were then two packinghouses in the area, with others projected. These were used entirely for export fruit. Most of the domestic fruit was packed in two-layer crates, unwrapped, most of it, in the field.

During the author's visit, there were three processing plants in the area, reported to use mostly dropped fruit, reportedly purchased for $0.42 [1] per box.

Arta is considered a late-producing area, but oranges bloom in March and April. Navels are harvested from early December to February, common seeded oranges from the end of December to May, with a few fruits left on the trees as late as June.

This area is subject to periodic frost damage. In 1963, there were two periods of frost, one on January 20 and another on March 4. About half of the orange trees in the Arta area were defoliated and some minor wood damage was caused and dead twigs, some a yard long, observed in 1963. It is estimated that fruit-damaging frost may occur every two or three years, and frost damage was again experienced in 1964.

The tree damage suffered in 1963 and 1964 reduced production. The citrus areas near the river and near the Mediterranean were less severely injured than those further inland.

Severe frost damage usually occurs about every 8 to 10 years. No frost protection is practiced.

In addition to the climatic hazard of frost, the area is subject to some wind damage, and cypress windbreaks are grown around some groves.

[1] All dollar and cents units indicated in study are U. S. equivalents.

Crete

This large island, about 250 miles from Athens, produces approximately one-eighth the total citrus of Greece. The major citrus plantings are in the vicinity of the town of Chania, with only scattered plantings in other parts. One such area is Iraklion, which produced in 1962–63 about 100,000 boxes of oranges. About 70 percent of these were the common seeded type and about 30 percent other varieties. This is an area of minor interest since all of the fruit is used in the domestic market, and there is little indication that future production will be greatly expanded.

Chania.—Most of the citrus in this area is grown within approximately 20 kilometers of the town of Chania. In 1962, the estimated planted area of orange trees of all ages was about 1.5 million trees (out of a national total of 10 million), and of tangerine trees about 250,000. In 1963, most of the bearing acreage was in old trees over 10 years of age, and of these, most bore the common seeded oranges. These old groves were planted at a density of 202 to 243 trees per acre. In the last 10 years, there has been an increase of oranges. These old groves were planted at a density of 202 to 243 plantings consisting mostly of Navel oranges; these groves are planted 162 to 202 trees per acre.

In 1962–63, this area of Crete is estimated to have produced 1.1 million boxes of oranges, of which about 800,000 boxes were local varieties (primarily common seeded oranges), and about 300,000 boxes Navel oranges. The 1962–63 crop also included about 63,000 boxes of tangerines.

Since plantings in the area are being expanded, it is estimated that by 1970 over 1.5 million boxes of oranges will be produced; at this time, 1 million boxes will probably be Navel oranges and about one-half million boxes common seeded oranges, or 2:1 Navels, in contrast to the 1962–63 ratio in favor of common seeded.

Crete has a mild climate; there is no frost hazard on the island. This climatic factor is responsible for the importance of Crete's oranges to the domestic market.

This area produces the earliest citrus of any part of Greece. Here, oranges bloom in March and April, and Navel oranges are harvested from October 1 through January and February, and the common seeded orange from November to June. In October, Navel oranges are just breaking in color; they are fully colored by mid-November. This early fruit is important to the domestic market.

In domestic marketing, most of the shipments to the mainland and to markets, such as Athens, are early fruit only; at this season, premium prices can be obtained. Transportation costs of about $0.74 per box limit mainland marketing. Besides furnishing the early shipment of fruit, Crete supplies the mainland markets of

Greece with oranges at such times as fruit is in short supply because of frost damage in other areas.

A coastal area about 9 miles west of Chania is the earliest of all. Here, oranges surrounded by cane windbreaks produce fruit which can be marketed up to 3 weeks before any oranges are available from other areas in Greece. In mid-September of 1963, it was observed that Navel oranges large enough to ship were available in this area, and it was said that by October 1 the fruit would attain reasonable maturity for marketing. In early September, the indicated Brix test of the juice was about 7°. This early season is a great advantage to the area; probably, future efforts will be made to take advantage of this to supply early fruit to the Greek market. As a result, this area is more interested in expansion of domestic marketing than in export marketing.

Groves are small, averaging only about one acre in size. They are cultivated by animals, tractors, or rototillers, and even in some cases by hand. Some are mixed-planted with vegetables and other producing crops; some are being planted in combination with olive groves. In such plantings, the olive trees may be removed later.

Many new plantings of small groves were seen by the author, mostly in Navel oranges. Also, a considerable number of the older common orange trees were being top-worked to the Navel variety. Local estimates indicated that at least 50,000 such trees had been top-worked in the two years just preceding the author's visit, and field observations indicated that this might have been a conservative estimate. So, since the common orange is not being planted, the area devoted to this old variety is being reduced each year.

At the time of the author's visit, the local nurseries were unable to supply sufficient trees for new plantings. Some trees were imported from the Greek mainland.

In this area, the yield of common oranges was estimated at about 1.3 boxes of fruit per tree. Navel oranges were reported, however, to have higher yields, with an average of at least 1.4 boxes to 1.6 boxes per tree. In the area's oldest bearing Navel orchard, the yields attained have been about double those characterizing common orange groves of about the same age.

The shortage of water observed in 1963 was the major continuing cultural problem. Small dead twigs in the top of trees were reported to be the result of insufficient moisture.

All groves were irrigated, partly by gravity water and partly by pumped water. Where water is abundantly available, groves of light soil are irrigated every 15 days. When water is in short supply, high areas may be irrigated only every 30 or 35 days. In visits to the producing areas, it was noted that in September some groves were suffering from lack of moisture. It was understood that this was a normal condition. Water was available in the river,

and it is possible that a future irrigation project may bring another 1,000 acres in the area under irrigation. It was noted that because of the shortage of water the tendency was to apply water to the groves in basins immediately under the drip of the tree.

The general care of groves was observed to be rather casual; only a few well-cultivated groves were seen. The trees are usually kept quite high, with the first limbs usually 4 to 5 feet from the ground. It was observed that trees are budded very high, about 5 feet from the ground, and when trees are top-worked this is usually done at a level of about 6 feet.

The major problem of growers in this early-producing area is said to be the Mediterranean fruit fly. Because of the warm climate, there are other fruit in the area, such as figs, which seem to keep the fly population alive. In early September, Mediterranean fruit flies were observed ovipositing on fruit. To control the pest, some growers in the area used cover sprays, others bait sprays.

Oil sprays are used, usually two times a year, to control scale pest. It was also noted in several groves visited that some scale population was present, indicating that pest control is not entirely adequate.

Armeni.—Most Greek citron is produced on Crete. In 1962–63, fresh fruit was produced amounting to an estimated 44,000 boxes. This is a great reduction compared to prewar production, estimated at 90,000 to 120,000 (76.-lb.) boxes per year.

The major areas of citron plantings on Crete are near Armeni and in the vicinity of Panormos and Iraklion. Most citron plantings are small and groves are planted at about 162 trees per acre, and yield an average of about 132 pounds per tree. However, some trees yield as much as 220 pounds. The average yield of citron is said to be about 250 boxes per acre.

Field observations indicate that the planted area is only being maintained, not expanded. Many new plantings are being made; however, bearing trees are being destroyed by the fungus mal secco.

The trees, kept low by pruning, are usually not over 6 or 8 feet high. The cultural care given the groves is about the same as with orange trees; some groves receiving rather poor care were seen.

The production of citron is evidence of the frost-free nature of the Cretan citrus areas. It is reported that here citron blooms from May to September. However, the primary harvest of fruit is from September to October. In the groves visited, it was noted that although mature fruit ready for harvest was available, the trees at the same time had fall bloom, and some young fruit was growing.

The Grecian variety of citron produced is extremely large. Fruits weighing two to three pounds were on the trees, and some

over 10 pounds each have been harvested. Some growers produce other varieties, including one called "Diamond of Italy." This variety produces citron of smaller size, some less than a pound.

In the groves raising the Greek-type citron, the fruits show great variety in shape, the Italian Diamond more uniformity.

The citron trees are raised from cuttings and not budded on rootstock.

In 1963, disease was certainly the major cultural problem. No mal secco resistant variety had been found. Some growers were also complaining of root diseases which killed the trees. As far as is known, little or no research has been done on these problems.

Unlike other citrus on Crete, citron is primarily an export crop and its export from Greece is under the control of one organization, the Union of Citron Producers. This organization is the sole exporter of citron from Greece, handling all the exports of the Peloponnesus citron area of Aeghion.

All of the citron on Greece is marketed in the form of a single processed product. Fruit is brought fresh to a seaside brining plant and put into hogsheads, whole, for a preliminary brining. After a curing period in sea water, the citron is cut in half and again put into hogsheads in a brine with salt added.

Upon the completion of the brining process, the citron peel is packed in brine in large wooden casks which contain about 551 pounds. The brining period requires 5 to 6 months in summer, a longer period during the winter season.

The cured brined peel is sold, f.o.b. Crete, at prices of about $290 to $300 per metric ton. Most of the peel is sold to Eastern Germany; however, some is exported to Western Europe, and the Union of Citron Producers indicate that there they obtain a lower price of about $240 to $250 per metric ton f.o.b. Crete.

Growers have been receiving an excellent return on fresh citron. Trade sources indicate that the average fresh fruit price in 1962–63 was about 6 drachmas per kilo, $6.89 per 76-lb. box. Growers' returns, however, were constantly being threatened by the loss of trees to mal secco.

Until 1963, all the exports, as indicated, had been brined peel. This was sent to European markets, primarily for use by the confection or bakery trades. By 1963, at the time of the author's visit, the Union of Citron Producers had completed construction at Iraklion of a new processing plant, with facilities to candy peel for export. This new plant was equipped with pressure vacuum vats, of Italian manufacture, in which the brined peel was first cooked and then candied with syrup. In addition, the plant management planned to candy fruits of half-citrons.

Greece will continue to export some brined peel, but in future candied peel may also be a major citron export item.

Varieties and rootstocks

The well-established representative orange of Greece belongs to a group of round seeded oranges harvested November to May. This common orange will be less important in future, but in 1964 it was the major variety processed as well as the leading orange variety sold in the domestic market. This is an acid, low-juice-yielding table-type orange of good eating quality when mature.

The Washington Navel is replacing the common orange as the major orange variety. In Greece, this is an early fruit harvested October through February. While it has fine eating qualities when mature, it tends to produce fruit too large for export to Western European markets.

The introduction of the Tarocco and Moro varieties from Italy, Doble Fina from Spain, and the Washington Navel may have introduced virus diseases which will present problems in the future.

The two most important lemon varieties are the Maglene, harvested September to January, and the Karystini, harvested January to May. Nearly all lemons exported are of these two varieties which are probably groups of varietal strains. Both produce fruit of good appearance, probably of better average grade than some competing Mediterranean lemons.

There are a few minor lemon varieties, such as "Polyphoros" or ever-blooming, which produces fruit for summer harvest, and "Diphoros" which has two blooms during the year, producing some out-of-season fruit.

Most citrus in Greece is grown on sour or bitter orange rootstock. However, in lemon areas, some trees are grown on a sour orange root with a sweet orange "sandwich" and a lemon top to attain some resistance to the fungus "mal secco."

All citrus trees are budded high, 3 to 4 feet from the ground.

The use of other rootstocks has been suggested, but, in 1963 rootstock experimentation was still in the future. While changes in rootstock might lessen the threat of tristeza to the orange and tangerine plantings, it might also increase the degree of frost damage as well as involvement with problems of Phytopthora fungus and dormant virus in old scion clones.

A small experimental station near Athens has a planting of citrus varieties. However, when it was observed, most citrus experimentation was in the planning stage. As the importance of the citrus industry grows, formal experimentation will probably be undertaken.

The Ministry of Agriculture had representatives in the field with responsibility for improving cultural practices; these officials also enforced government regulations, including inspection of export

fruit packs. Their dual roles of extension specialist and policeman were at times in conflict.

Domestic fruit marketing

Buying and Picking.—The manner in which the Greek grower markets his crop varies by district and also by buyer; the latter may be an exporter, processor, or domestic wholesaler, or a combination of two of these. The following descriptions illustrate usual marketing practices for both oranges and lemons.

Arta is primarily a supplier of the Greek domestic orange market and, therefore, the marketing practices meet this condition. Fruit which is to be exported may be purchased and picked by the exporter-picking crews. Fruit purchased in this manner is usually measured by weight. Fruit which is to be sold in the domestic market, which represents most of the harvest, is purchased by Greek fruit buyers "per kilo," or occasionally, on the trees for a flat sum.

Unlike the fruit which is sold for export, the fruit intended for domestic sale is picked by the grower, who delivers it to the roadside for the purchase price. The buyer for the domestic market then takes the fruit, weighs it, and place-packs it in two-layer crates by the roadside or in the grove. Very rough grading is performed in the field at the time of packing. The domestic buyer furnishes the boxes and also such packing help as is required to prepare the fruit for market. The grower either picks the fruit himself or hires labor, and a man picking fruit from large trees with ladders can harvest about 1½ tons of fruit per day. Women are also employed in picking fruit and are paid 40 drachmas ($1.33) per day. Most of the work performed by women is that of hauling the fruit from the trees to the roadside.

Whether the fruit is to be used for export or for the domestic market, it is clip-picked.

Some of the fruit sold for export is also picked by the grower. In this case, the grower hauls the fruit to the packinghouse as he does also with fruit sold to juice plants.

In the lemon areas of Xylokastro, Aeghion, and Patrai, the grower usually does the harvesting. However, some exporters may furnish picking crews. All lemons are clip-picked, mostly by women. Men workers handle most of the ingrove portage and hauling. (In 1963, the cost of picking was estimated at $10 per acre. Men hauling citrus were paid about $3.50 per day, which resulted in portage or hauling cost of about $1.00 per ton, or $0.03 per box.)

Domestic Use.—In recent seasons, about one-half of the citrus crop has been used fresh in the domestic market and a fourth to a third exported fresh, with the balance processed.

Export sales have been more important in utilizing lemons than oranges. In 1963–64, 84 percent of orange production was consumed domestically, compared with only 64 percent of lemon.

Citrus marketing is very seasonal and oranges are available in volume only from November through April. Navel oranges usually bring a retail price of about double the price of common oranges. In the summer, only a few oranges are available; these are mostly cold-stored fruit.

Although some fresh lemons are available throughout the year, they are in most plentiful supply from November through June.

Lemon packers report that the domestic market likes large-size lemons while the export preference, particularly in Western markets, is for smaller fruit.

Export fruit marketing

Packing for Export.—The growth of Greek exports since 1955 resulted in construction of modern packinghouses.

By 1963, there were 4 export packinghouses in the Nafplion area, 2 in Sparta, 2 at Arta, 1 on Crete, and 8 to 10 smaller installations in the lemon areas of Aeghion and Xylokastro.

Most of the packinghouses observed were built of concrete and tile, with roof supported by steel beams. They were all quite large, considering the volume of fruit handled. The machinery was usually built in the Mediterranean, Cyprus, Algeria, and Israel. All the plants visited had facilities for washing fruit, brushing, and drying, along with grading tables and calibration equipment for sizing fruit, and packing tables. Average capacity of these orange plants was 100 tons to 200 tons of fruit per day. The shook used is obtained partly from Israel and Yugoslavia. Exporters supplying Russia obtained their shook from that country.

The quality of boxes observed in the packinghouses was somewhat below the standard usual in the Atlantic Coast-European market. It is quite possible that the quality of Greece's export boxes would have to be improved if any considerable quantity of fruit is to be shipped into Western European markets.

Exporters disposed of discarded fruit, either to the local market or to juice plants.

The wages of women working 8 hours a day in orange packing plants was reported to be about 45 drachmas ($1.50). In lemon areas, packers were paid about 44 drachmas ($1.47) per day. However, after social security taxes of about 16 percent are paid, the total wage cost was more nearly 60 drachmas (or $2.00) per day.

The best packers were reported to full-wrap-pack 30 to 35 full boxes of lemons per day. In some packinghouses, the packer also

did some grading and fruit selection while packing. In 1963, a paper carton, one-half box size, made in Greece, was reported to cost about $0.28, and a two-compartment wooden box about $0.43.

Both a wooden two-compartment box, holding about 66 pounds net of lemons, and a half-box paper carton holding about 35 pounds net, were used for export to Western European markets. Lemons were fully wrapped and diphenyl-treated paper was used for most countries, untreated paper for exports to Germany. Fruit exported to Russia and Czechoslovakia was not wrapped, as these were considered less discriminating markets.

Export fruit was usually trucked to seaport and shipped to export markets by sea. The exception to this was exports to Germany and Central European countries, where the fruit was sent to market by rail.

In 1963, exporters indicated that sea transport from Greece to the United Kingdom required about 10 days.

The export of all fruit from Greece was supervised by the Greek Ministry of Agriculture. Common Market standards were utilized and all fruit for export prepared in a packing plant. Export of field-packed fruit was not permitted.

Export Sales.—Citrus exports are a postwar development and have been made in significant volume only since 1955. In 1948, total exports of citrus fruits were less than 100,000 boxes; by 1958, they had increased to 600,000 boxes of oranges and 500,000 boxes of lemons. The export volume continued to increase, reaching a record high of 1.7 million boxes of oranges and 1.1 million boxes of lemons in the 1962–63 season. Because of frost losses, exports declined in the following season to 827,000 boxes of oranges and 841,000 boxes of lemons.

The future of Greek citrus exports is undecided, in spite of rapid recent gains. In the 1963 calendar year, 58 percent of orange exports, and 79 percent of lemon exports moved to Eastern Europe and the USSR. Austria and West Germany have been the only markets of any significance in Western Europe for Greek oranges. Only very small quantities of Greek lemons have so far penetrated Western European markets.

As a newcomer to international citrus trade, Greece has never had to sell a large volume of citrus in Western European markets in competition with long-established exporters, such as Spain.

The future of Greek citrus export volume, therefore, depends on the development of competitive status in discriminating Western European markets or expansion of Eastern European, or both.

Competition in Western Europe's winter citrus market is likely to increase, and Greece has no apparent advantage in regard to either quality or season.

Greek orange exports will be primarily Navels, and in these markets will be in full competition with Navel oranges from Spain and Morocco, which areas are closer to Western European destinations and have more experienced exporters.

Membership in the European Economic Community is unlikely to be an advantage sufficient to enable Greece to expand very greatly its exports to Western Europe.

Israeli exporters have much the same transport problems as the Greek, but Israel's is a highly developed industry and exports Shamouti variety fruit, distinctly different from Spanish and Moroccan fruit and therefore more competitive.

The growing supplies of Greek oranges and lemons will probably create internal pressures to "do something about the citrus industry." The most likely solution in terms of larger export markets is Eastern Europe.

Therefore, the growing citrus production in Greece and the pressures for new markets are likely to result in increased Greek trade with Eastern Europe.

Considering all the problems Greek citrus trade is likely to encounter, orange exports may be expected to expand in the years ahead as production increases. A more rapid expansion of orange exports would be possible only if Eastern European countries adopt much more liberal policies regarding citrus fruit imports. It is very unlikely that exports to Western Europe will increase at a more rapid rate.

The outlook for lemons is much the same. The rate of increase in exports will be dependent on increased sale to Eastern Europe, since Western Europe's major source of lemons is Italy, the Common Market member that produces citrus and is the world's second most important lemon producer.

Seasonality.—Almost all Greek citrus is exported in the winter, November–May. In the 1963–64 crop year, 86 percent of tangerine exports were shipped in the 4-month period, November through February, and 88 percent of orange exports in December, January, and February. There were only 11,000 boxes exported in May, and none after May.

Some lemons are exported throughout the year, but Greece is primarily a winter-season lemon exporter. As an example, in the 1963–64 year Greece exported 841,000 boxes of lemons in the period November 1963 through October 1964. Of these exports, 736,000 boxes—about 88 percent—were made in the 4-month period, November through February.

The Greek orange export season is likely to remain very short. There is very little production of late orange varieties to extend the season, so that for some time Greece will export few oranges

after March. If late-maturing orange varieties were to be grown in the future, they would probably extend the export season by 60 days. Extension of the orange season would create a serious problem with the Mediterranean fruit fly, observed to be active in some districts in October.

The short export season creates problems of marketing and operation. Navel and "local" oranges from Greece are exported in the peak period of exports from Morocco, Italy, and Spain. Greek oranges must thus be sold when Mediterranean orange supplies are at their peak. For this reason, any substantial increase in Greek exports can create temporary market gluts. The marketing season will thus be the major limiting factor in expanding exports to Western European markets.

The short season also creates packing and shipping problems. An export season of 90 days requires double the packinghouse capacity that would be necessary to pack the same quantity of fruit for a 180-day export season. Greek orange exporters need packing capacity far greater proportionately than that needed by competitors in Israel, Morocco, and Spain. This excess Greek packing capacity adds to packing costs and decreases competitiveness in international markets.

Table 3.—CITRUS: Monthly exports by variety, in Greece, 1962-63 and 1963-64

Month	Lemons		Oranges		Tangerines	
	1962-63	1963-64	1962-63	1963-64	1962-63	1963-64
	1,000 boxes	*1,000 boxes*	*1,000 boxes*	*1,000 boxes*	*1,000 boxes*	*1,000 boxes*
November	188	248	30	37	35	36
December	216	151	563	178	40	58
January	185	253	639	495	21	17
February	117	84	339	52	—	2
March	169	22	144	34	—	19
April	46	2	7	20	—	—
May	15	4	1	11	—	—
June	32	—	18	—	—	—
July	15	12	—	—	—	—
August	2	—	—	—	—	—
September	15	2	—	—	—	—
October	12	63	—	—	—	—
Total	1,012	841	1,741	827	96	132

Source: Government of Greece, *Foreign Trade of Greece.*

Lemon exporters are in a better situation, but they face much the same basic problems. The lemon export season is somewhat longer. However, the major Greek export season is the same as that of the heaviest supply of lemons from Sicily. Lemons are a commodity of inelastic demand, and increases in market supplies can result in a serious reduction in prices. For this reason, a great increase in Greek lemon exports to Western Europe is unlikely.

Table 4.—ORANGES AND TANGERINES, FRESH: Exports from Greece, average 1956-60, annual 1959 to 1963

Country of destination	Year beginning November 1					
	Average 1956-60	1959	1960	1961	1962	1963
	1,000 boxes [1]	*1,000 boxes* [1]	*1,000 boxes* [1]	*1,000 boxes* [1]	*1,000 boxes* [1]	*1,000 boxes* [1]
Western Europe:						
Austria	25	16	62	110	256	266
Belgium-Luxembourg	8	—	—	—	—	—
Finland	—	—	—	5	—	—
France	—	—	—	—	27	—
Germany, West	117	100	77	74	167	78
Netherlands	—	—	—	—	13	—
Norway	5	—	—	—	—	—
Sweden	—	—	—	—	65	—
Switzerland	7	—	—	—	5	—
United Kingdom	17	12	2	4	26	—
Total	179	128	141	193	559	344
USSR	172	188	245	682	797	358
Other Europe:						
Bulgaria	11	7	6	—	20	—
Czechoslovakia	50	23	24	33	11	48
Germany, East	54	98	30	93	111	100
Hungary	—	—	—	14	17	16
Poland	—	—	—	12	19	18
Rumania	25	29	—	—	14	—
Yugoslavia	138	222	234	354	213	44
Total	278	379	294	506	405	226
Saudi Arabia	—	—	—	—	3	—
Other countries	166	230	130	42	74	31
Grand total	795	925	810	1,423	1,838	959

[1] 70 lb. each.

Source: Government of Greece, *Foreign Trade of Greece.*

The inability to produce lemons for summer marketing, which is a result of climate, is the most important limiting factor affecting lemon exports from Greece.

Export Customers.—In calendar year 1963, the USSR was the largest single export market for Greek oranges, taking 38 percent of the total. Eastern Europe, of which Yugoslavia and East Germany were the principal markets in 1963, accounted for a fifth of the total orange exports. In Western Europe, Austria and West Germany were, by far, the leading customers, taking about 95 percent of the volume exported to this area.

Nearly 60 percent of the fresh lemons exported from Greece in 1963 moved to countries in Eastern Europe, excluding the USSR. Yugoslavia, Poland, and Czechoslavakia were the most important markets in this area. The USSR took 189,000 boxes or 19 percent. The volume exported to Western Europe continued quite small,

with France and West Germany taking virtually all of the lemon exports to this area.

Eastern Europe is likely to continue to be the major market for Greek citrus, but expansion here involves serious problems.

The future of Eastern European trade will depend on recipient countries governments' developing policies favorable to larger citrus imports. It will depend on the willingness or ability of Greece to accept Eastern European commodities in exchange for citrus. In addition to these basic elements, increased exports to Eastern Europe will depend on transport and storage facilities in market areas. All these countries importing citrus from Greece have severe winters requiring citrus to be protected from freezing by heated storage and transport facilities. Such facilities will have to be expanded before Greek exports can gain significantly.

Table 5.—LEMONS, FRESH: Exports from Greece, average 1956-60, annual 1959-60 to 1963-64

Country of destination	Year beginning October 1					
	Average 1956-60	1959	1960	1961	1962	1963
	1,000 boxes [1]	*1,000 boxes* [1]	*1,000 boxes* [1]	*1,000 boxes* [1]	*1,000 boxes* [1]	*1,000 boxes* [1]
Western Europe:						
Finland	—	—	—	6	9	—
France	2	—	6	8	82	28
Germany, West	30	16	26	—	51	2
United Kingdom	1	—	—	—	—	—
Total	33	16	32	14	142	30
USSR	138	264	278	332	176	332
Other Europe:						
Bulgaria	19	10	—	26	68	48
Czechoslovakia	96	136	77	90	132	117
Germany, East	43	51	11	145	125	72
Hungary	12	18	7	—	—	—
Poland	116	244	237	212	139	112
Rumania	52	76	—	—	—	—
Yugoslavia	51	96	70	140	175	56
Total	389	631	402	613	639	405
Other countries	55	37	75	14	154	25
Grand total	615	948	787	973	1,111	792

[1] 76 lb. each.

Source: Government of Greece, *Foreign Trade of Greece.*

Grower costs and income

The wages of farm labor are increasing in the citrus areas of Greece. Local observers estimated for the author that an unskilled farm laborer working in citrus would be paid about 60 drachmas ($2.00) per day. Skilled labor for citrus orchards, such as workers

pruning trees, would be paid more, about 80 drachmas ($2.67) per day. This wage may include fringe benefits, one meal per day.

Wages are tending to increase at perhaps 10 to 15 percent per year. Reasons for the rising wage cost are a combination of the employment opportunities in packinghouses and processing plants, and the exodus of labor to work in northern European countries.

At the time of the author's visit, balled, budded nursery trees sold for $0.50 to $0.57 each in Nafplion, $0.33 to $0.50 each in Arta, and $0.47 to $0.50 each in Crete.

Very few citrus properties are sold, but trade sources indicated a bearing irrigated orange grove in the Nafplion area sold for about $6,000 per acre in 1963.

The grower's returns are, of course, influenced as much by production as by costs. Yields are a major cause of low returns to growers. Not only are average yields of citrus low, but also there is a very wide variation between producing areas and groves in each producing area. Field observations and interviews with growers indicate that yields in commercial groves that produce mostly export fruit range from 200 to 300 boxes (70-lb.) of oranges, and 250 to 350 boxes (70-lb.) of lemons per acre. Such yields are at least double the average for all Greek groves.

Government Assistance—Growers who comply with the program and objectives of the Ministry of Agriculture are eligible for the following assistance under Law 4035 of 1960:

1. A 50-percent subsidy on the costs of trees, grafts, seeds, etc.
2. A 50-percent subsidy on pesticides.
3. A 50-percent subsidy and up to 4,500 drachmas ($150) per mechanical spraying apparatus and up to 2,000 drachmas ($67), per "knapsack" (self-carried) sprayer.
4. A 30-percent subsidy ranging from 1,500 to 6,000 drachmas ($50 to $200), for single-axle tractors of 5 to 13 horsepower.
5. A subsidy of 20 drachmas ($0.67) per citrus, apple, or peach tree top-worked to recommended varieties, with a maximum allocation of 1,200 drachmas per stremma ($162) per acre.
6. A subsidy of 30 percent and up to 5,000 drachmas for pumping units.
7. A subsidy on Agricultural Bank loan interest.

The Agricultural Bank of Greece also has offices in the citrus areas and makes loans to assist the citrus industry. The bank makes crop loans at an interest rate of 7½ percent per year. On such loans, the bank will lend the entire cost of all pesticides and fertilizer to be used, also up to 600 drachmas per stremma ($81 per acre), for cultivation expenses. The latter is not paid the grower in one item but in two or three installments per year. These loans are paid off when the crop is harvested.

The bank also makes medium-term loans up to 8 years. These medium-term loans draw an interest rate of 7 percent and may be used to purchase trees for planting and to cover the cost of planting and fencing a new grove. Some unusual expense items are also covered by this type of loan, such as the top-working of common orange trees to the Navel variety. For such loans, an interest rate of only 2 percent is charged and these loans run for 5 years.

On November 19, 1964, the Ministerial Economic Committee decided to subsidize citrus fruit exports as follows:

	Dols. per short ton
Common oranges	6.00
Navel oranges	9.00
Tangerines	9.00
Lemons	12.00
Oranges for the production of juices for export	4.50

It was also decided that a committee would be set up with representatives from the Ministries of Commerce and Agriculture, the Bank of Greece, the Cooperatives, and the exporters, which will review the citrus export contracts to be signed to see whether quoted prices are within accepted international price margins at the time the contract is negotiated.

The 1964 export subsidy on lemons was equivalent to about 40 U.S. cents per box, or about 20 U.S. cents per carton, a substantial aid to the Greek citrus export industry.

Cost of Production.—Cost of citrus production in Greece is illustrated by estimated total costs for oranges in Arta and Sparta; and for lemons in Xylokastro. These estimates of total costs ranged between $159 and $231 per acre for oranges and $200 and $251 for lemons. Such costs, however, include a great deal of unpaid labor since the cultural care of groves is largely a family operation. The actual cash outlays are for irrigation water, insecticides, fertilizer, and taxes. Under the Greek system, taxes are not a burden on production since they are levied at the sales level. Thus, the grower pays the most tax in good years and none if his crop is lost to frost.

On the basis of data collected by the author in 1963, the estimated cash outlays by growers:

Item	*Oranges (Arta)* *U.S. dols. per acre*	*Lemons (Xylokastro)* *U.S. dols. per acre*
Irrigation	0—4	27—40
Pest control	22	54—65
Fertilization	54—67	54
Taxes	13—27	20—40
	89—120	155—199

Export costs and returns.—These costs evaluate the export situation in 1963. At the price to the grower of 2 drachmas per kilo, marketing costs in Greece represented about 40 percent of the cost of Navel oranges and lemons export-packed, loaded at Athens.

At these marketing costs, Greek growers could be paid about $2.00 per box for fruit, and exporters could take a profit of about $1.00 per box and deliver (by ventilated stowage) Navel oranges to England for about $5.00 per box, and lemons for about $5.50 per box ($2.25 per half box).

Returns vary from district to district, and by season, depending on export demand. However, in the 1960's citrus has been a profitable crop in Greece and returns to growers excellent, compared with cash returns for other agricultural crops.

In 1963–64, for example, grower returns for oranges averaged 1.83 drachmas per kilo, or $1.93 per 70-lb. box. During the same season, returns to lemon growers averaged 2.04 drachmas per kilo, or $2.34 per 76-lb. box. Citrons, as might be expected, yielded highest returns, 4.72 drachmas per kilo, or 7.13 cents per pound.

Processing industry

The citrus juice industry in Greece is a very recent development, but by 1964 every one of the five major citrus areas had processing facilities. Only two were operated primarily for lemons. While the capacity of most plants is small, this is a large total processing capacity in terms of the small Greek citrus industry.

This new industry faces many problems, understanding of which derives from knowledge of the facilities and operating conditions in each producing area. These are described as observed in the fall of 1963.

In the *Aeghion* lemon area of the Peloponnesus, one plant was in operation that worked primarily with lemons. Lemons in this area yielded about 30 percent by weight in juice, trade sources indicate, and processors indicated that they paid from 0.80 to 1.50 drachmas per kilo ($24 to $45 per short ton) for fruit.

The plant produced single-strength juice, some quantities canned in 6-ounce cans for export to Western Germany. However, the primary product was concentrated lemon juice of 40° to 41°. Brix, a preserved juice packed in polyethylene-lined paper cylinders.

The lemon processing plant visited was small, and similar to some of the smaller Sicilian lemon-processing plants.

Cold storage was available in the area for lemon juice; a small quantity was under cold storage at the time of observation. In addition to the juices produced, lemon oil was extracted and sold.

In the *Nafplion* area, there were in 1963 two citrus processing

plants. One had been in operation since about 1955, producing mostly "base" drinks for utilization in Greece. The drinks produced at this plant were patterned after a hot-pack used in the United States. Another plant capable of producing frozen juices started processing in the 1963–64 season.

Citrus processors in this area were faced with the problem of increasing production of Navel oranges. Their primary source of juice had been the common seeded orange which they had been able to purchase, mostly as dropped fruit, for about one-half to one drachma per kilo ($15 to $30 per short ton). They had also been able to obtain lemons for about one drachma per kilo ($30 per short ton). The common seeded orange was no longer being planted and new plantings did not contain any other varieties that seemed likely to provide processing quality fruit. Some processors indicated plans to begin experimentation on the use of Navel oranges.

The common orange in this area was processed from January 10 to May, a very short season. The color of the juice was excellent and the Brix in November about 11.5°, but about 13° by April. The yield of juice by weight for oranges was about 40 percent, and for lemons, about 28 percent to 35 percent by weight.

The yield of raw essential oil averaged about 5 to 6 pounds per short ton for lemons and about 8 pounds for oranges.

In Greece, lemon oil was the most valuable product and raw oil had recently sold for a price of $6.05 per pound and orange oil for $0.91 to $1.21 per pound.

The type of product produced varied with the plant; most produced essential oil. One was observed to be producing in-plant extracted juice, using Italian machines. Some was mixed with sugar, then refrigerated to be used for a bottled drink used domestically in Greece. Such juice concentrated with sugar in about one-liter bottles was said to retail for about 20 drachmas ($0.67). There was also some experimentation going on with the canning of single-strength canned orange juice.

The plants seen were of small capacity. During the 1963–64, season, approximately 58,000 metric tons of oranges and 16,600 metric tons of lemons were utilized in the production of juices.

In the *Sparta* area, plants processed from about December 15 to April 1, and practically all of the fruit used was the common seeded orange of the area. In the 1962–63 season, processors here reportedly paid about 1 drachma per kilo ($30 per short ton.)

For 1962–63, the largest plant in the Sparta region was reported to have packed about 25,000 cases each of 24 No. 2 cans of single-strength juice, as well as about 1,000 metric tons of 65° Brix concentrate.

The reported yield of juice for common oranges was 40 percent by weight.

The *Arta* region had three citrus processing plants in 1963, with an estimated capacity of about 500 metric tons per day. This potential is realized only during two months—February and March—of most years. All three of these plants pack other food items at times, such as tomato products, fruits, or jams and vegetables. Because of the relatively short citrus processing season, all the plants were trying to develop other means of utilizing plant capacity. The two primary citrus products were then canned single-strength juice packed in No. 2 cans and 65° Brix concentrate, which was mostly preserved with sulphur dioxide and was packed in polyethelene-lined wooden casks holding about 550 pounds. Of these two, the more important product was 65° Brix concentrate, sold for use in Greece and also to Western European bottlers.

Processing in the Arta region had been largely a salvage operation. Common oranges were the type used, and nearly all of the fruit processed up to the time the author visited Greece had been dropped fruit which was sold at the plant for $14 to $26 per short ton.

Trade sources indicated that some of this preserved 65° Brix concentrate was sold for export in Western Europe, f.o.b. Greece, at a price of about $600 per metric ton.

Processors reported that the yield from common oranges at Arta is about 38 percent by weight.

While Arta still had a sizable production of common oranges for processing, supplies were being reduced by the top-working of these trees to Navel varieties. Therefore, the future of processing here was in doubt, as the source of supply of processing fruit was gradually being eliminated.

Orange processing at *Chania* [2] in 1963 was carried on by five plants but four of these were small. The processing season in a normal year is about January through April, but occasionally some processing is carried on until July.

The largest plant is a cooperative which, however, in the near future was expected to become a private organization. The Agricultural Bank of Greece will be the largest shareholder. As a cooperative, the large plant has been paying 0.60 drachmas per kilo ($18 per short ton) to growers when fruit is delivered for processing. At the end of the season, an additional sum had been paid to growers, normally about 0.20 drachmas per kilo ($6 per short ton), making the total returns for members of the cooperative about 0.80 drachmas per kilo ($24 per short ton).

The cost of transporting the fruit from the grove to the processing plant varies from about 30 to 70 drachmas per metric ton ($0.91 to $2.12 per short ton).

[2] Citron processing is discussed in the section on Crete.

All of the fruit utilized are the common seeded oranges; no Navels had been processed up to 2 years ago. About half of the fruit used was reported to be dropped oranges, the balance discards from fresh fruit marketing; until recently the same price has been paid for dropped oranges as for the cull-outs from fresh marketing. In future, more will probably be paid for the picked fruit.

Processors in the area do not seem worried about the supply of fruit. They stated that even when the total production of common oranges is reduced to 20,000 metric tons (630,000 boxes) by top-working, the maximum use for products will probably be about 5,000 metric tons (160,000 boxes). Thus, in the future, according to present plans, processors will use about one-fourth of the common oranges produced in the area.

In spite of the small opportunities for processing, one processor indicated that a plant expansion was planned in order to have capacity to salvage the abnormal quantities of fruit produced by windstorm or other factors.

Navel oranges are not used because processors say they have a bitter taste. The common oranges used are reported to yield from 39 to 40 percent of juice by weight. The yield of essential oil of orange is rather low, about 3 to 4 pounds per ton, but with improved equipment this situation may be improved.

No canned single-strength juice is produced here and the primary products are 65° Brix concentrated preserved juice for export to foreign markets and 60° Brix concentrated juice for sale in the domestic Greek market. Some of the juice for the domestic market is not preserved, but instead is refrigerated to serve certain customers.

Processors indicated that 60° Brix preserved juice for the domestic market was sold in 1963, for about 20 drachmas per kilo[3] ($3.33 per gallon), compared to 17 drachmas per kilo ($2.83 per gallon), for 65° Brix concentrate sold in foreign markets. These prices are f.o.b. Crete. For this reason, the domestic market for industrial juice is more attractive than the foreign market, and Cretan processors sell in foreign markets only when there is an abundant supply of juice.

According to the estimate of processors, it requires 33 pounds of oranges to produce 2.2 pounds of 65° Brix concentrate, and about 29 pounds to produce 2.2 pounds of 60° Brix concentrate.

Most of the juice produced in Crete is used in the domestic market as a bottled product. The concentrated juice is diluted with water, and sugar is added to make a juice of about 50° Brix. These bottles contain about 30 ounces. In 1963, they were selling for 14 drachmas ($0.47) at the processing plant, and they retailed at

[3] Converted at the rate of 11 pounds per gallon.

about 18 to 20 drachmas ($0.60 to $0.67) each. It was estimated that this bottled product contained about 55 percent juice.

The largest processing plant at Chania contained an extractor of French manufacture, equipment for treating essential oil, and a Swiss-manufactured concentrator. The extractor was reported to have a capacity of about 2 metric tons of fruit per hour. After processing, the concentrated juice from 5-gallon cans was dumped into vats and sugar and the correct amount of water mixed, ready for bottling. Juice observed was rather light but of good flavor.

Because of the small supply of common oranges, the amount of fruit that can be processed is certainly limited and no great expansion of processing should be expected.

Returns on products fruit.—A frequently-asked question in Greece is "what returns should growers expect for products fruit?" Like all other Mediterranean citrus producing areas, processing has been, and will continue to be, a means of using salvage, low-value fruit. Citrus processors in the Mediterranean pay only a fraction of the average price of oranges sold as fresh fruit. Until 1964, this has been true in Greece, and field drops and culls have been the processors' source of supply.

A comparision of grower returns in our own industry illustrates the basic factors involved in grower returns for product fruit.

In Florida, the equivalent on-tree returns for oranges used for processing have been nearly equaled as fresh-fruit returns, or have, in some instances, even exceeded them. Representative returns showing a comparison for fresh and products fruit follow:

	Early and midseason [1]		*Valencias* [1]	
	Fresh	*Products*	*Fresh*	*Products*
Year	*U. S. dol.*	*U. S. dol.*	*U. S. dol.*	*U. S. dol.*
1949-50	1.74	1.84	2.73	2.52
1952-53	1.15	1.11	1.54	1.49
1955-56	1.69	1.72	2.08	2.02
1958-59	2.61	2.60	3.06	3.13
1961-62	2.31	1.85	1.73	1.83
1964-65	3.04	2.65	2.29	2.33

[1] Prices per 90-lb. box.

However, Florida produces a juice-type orange with excellent juice and fruit solids yield. These are largely the result of soil and climate, and Greece cannot produce oranges with Florida qualities.

On the other hand, California, like the Mediterranean, is primarily a table orange producing area and its experience with low returns on product oranges will probably be repeated in Greece. Since Greece will produce primarily Navel oranges, these California returns are most significant. As an example, in 1952–53, fresh

Navels returned $1.77 per box and products fruit 23 cents per box; in 1961–62, when fresh Navels brought $5.92 per box, product Navels returned $0.74 per box. On-the-tree returns for California fruit, contrasting fresh with product data, follow:

	Navels [1]		*Valencias* [1]	
Year	*Fresh* *U. S. dol.*	*Products* *U. S. dol.*	*Fresh* *U. S. dol.*	*Products* *U. S. dol.*
1946-47	2.17	0.22	1.51	0.13
1949-50	2.17	.07	2.13	.77
1952-53	1.77	.23	1.59	.73
1955-56	2.96	.06	3.05	1.04
1958-59	3.06	1.10	3.09	1.60
1961-62	5.92	.74	3.74	1.66
1964-65	3.06	.02	1.97	.67

[1] Prices per 75-lb. box.

These examples indicate that processing will not add significantly to Greek grower returns even if products use expands considerably above 1964 levels. Use of Greek citrus for processing will probably therefore continue to be a salvage operation.

Juice Quality—Greek oranges produce juice which is well colored but high in acidity. In Arta, the major orange producing area, Navel oranges tested had total acids ranging from 1.34 percent in November to 0.68 percent in March, and a Brix acid ratio ranging from 7.8 in November to 16.5 in March. "Local" seeded oranges produced in Arta had a range of acidity from 2.28 percent in November to 1.29 percent in March, and the Brix-acid ratio ranged from 4.8 to 9.2.

Oranges grown on Crete are slightly less acid, and those produced on the Peloponnesus are more acid than Arta-produced fruit.

Juice yields are modest, from 27 to 32.9 milliliters of juice per 100 grams of Washington Navels produced at Arta, and from 35.1 to 42.4 milliliters of juice per 100 grams of local seeded Arta oranges.

The high acidity and low juice yields seem to indicate that Greek oranges have limited possibilities for processing. Tests of Greek lemons indicate seasonal juice yields range from 28.5 to 39.7 milliliters of juice per 100 grams of fruit, and that acidity ranges from 7.8 percent to 9.2 percent in October, to 5.3 percent to 6.8 percent in May. There is no fruit fly problem with lemon processing.

Citrus products exports

Brined citron peel exports have been sustained over a long period; in some recent years, total exports have exceeded 2 million

pounds. In the future, Greece is likely to continue to be an important source of brined and glacé citron peel and a minor source of essential oil of orange and lemon.

In the 1950's, Greece imported more citrus oils than she exported. As processing expanded, however, reports of citrus oils began to increase and by 1963, exports exceeded imports by a fairly substantial margin.

Juice exports are a recent development and likely to be increasingly important as production expands. In 1961, exports suddenly loomed into prominence when about 1.9 million gallons (single-strength equivalent) of concentrated fruit juices, mostly hot-pack and preserved orange juice, were exported. In 1962, concentrated juice exports continued at about the same level and were about seven times larger than the single-strength juice trade. The concentrates are mostly of the industrial type. In 1963 and 1964, however, exports of concentrates fell sharply, with the sweetened single-strength orange juice taking over a commanding lead.

Table 6.—CITRUS PRODUCTS: Greek trade, 1953-64

Year	Essential oil		Fruit peel [1]	Fresh citron [1]	Exports		
					Fruit juices [2]		
	Exports	Imports	exports	exports	Single-strength	Concentrate	Total
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 U.S. gals.*	*1,000 U.S. gals.*	*1,000 U.S. gals.*
1953	3	5	657	[4]	—	—	35
1954	—	8	505	[4]	—	—	5
1955	—	11	646	[4]	—	—	—
1956	[3]	11	796	[4]	—	—	1
1957	10	10	831	[4]	—	—	15
1958	3	10	1,951	[4]	—	—	14
1959	4	10	2,275	[4]	—	—	5
1960	18	26	1,034	11	—	—	46
1961	22	15	2,158	2	223	1,862	2,085
1962	22	22	2,465	2	267	1,886	2,153
1963	55	26	1,876	567	891	315	1,206
1964	64	20	278	2	1,740	423	2,163

[1] No imports. [2] Shown as single-strength equivalents. Converted at 8.7 lb. per U. S. gal. of single-strength and 11 lb. per gal. of concentrate. [3] Less than 500 units. [4] Not separately classified.

Source: Government of Greece, *Foreign Trade of Greece.*

Export Customers.—Greek trade in brined citron peel is well-established and German areas are the most important customers. During the period 1960-63, exports ranged between 1.0 and 2.5 million pounds, with both West Germany and East Germany alternating as the leading export market. Small exports for this period are indicated to Belgium, Denmark, the Netherlands, Sweden and Switzerland. Future trade is likely to continue to be confined to northern European markets, where citron peel as a confection is widely used.

Essential oil of citrus has no well-established trade pattern. Although West Germany has usually been the leading customer, such markets as the United Kingdom, Algeria, and France have also been prominent receivers in recent years.

In 1963, West Germany was the major customer for sweetened single-strength fruit juice, accounting for about 44 percent of the total exports from Greece. Other customers of prominence in 1963 included the United Kingdom, Netherlands, Denmark, Sweden, and Czechoslovakia.

Exports of the unsweetened single-strength fruit juices have been relatively small. In 1963, the United Kingdom and West Germany accounted for the bulk of such reports.

The United Kingdom and West Germany were again the most prominent customers in 1963 for the concentrated juices, together taking about 40 percent of the exports. An interesting observation rests in the fact that in 1963, Greece exported about 11 percent of its total volume of concentrates to the United States, a reflection of the supply shortage in Florida, the principal producing State. Israel, another prominent citrus producer and processor, also accounted for a small volume of the concentrated juice exports from Greece.

These data are reported to indicate recent customers for Greek citrus juices; however, Greece had no well-established export markets for juices at the time the study was made. A very different trade pattern may develop in future when world citrus juice supplies are more abundant. This changed trade pattern may affect both the type of juices exported and the choice of markets.

Orange juice produced from Navel oranges is unlikely to result in competitive consumer-packaged single-strength or frozen concentrated juices. In the future, industrial orange juice is likely to be the major export item and Western Europe will not necessarily be the major customer.

Appendix

ASSOCIATION WITH THE EEC

On July 9, 1961, an agreement of Association of Greece with the European Economic Community was concluded in Athens and this came into force on November 1, 1962.

The following highlights from the Association Agreement illustrate this new aspect of the Greek economy:

"Mutual Tariff Cuts"

Starting as of November 1, 1962 custom duties between Greece and the Community will be gradually abolished over a 12-year pe-

riod for all products included in Annex III of the Association Agreement (i.e., all of Greece's *export* agricultural commodities and manufactured products not produced in Greece), but:

—on the entry into force of the Agreement Greece benefited automatically by all tariff reductions which in the meantime had taken place among the six EEC member countries. Hereafter, Greece will benefit from all tariff reductions to be announced by EEC until duties are completely wiped out.

—in order to protect her young industries, Greece may during the first 12 years, and within prescribed limits, apply new duties or increase existing ones, on condition that they are abolished or reduced to their previous levels within 9 years and then gradually removed.

—for commodities listed in Annex I of the Agreement which includes nearly all products currently manufactured in Greece, the complete elimination of Greek duties will be staggered over a 22-year period.

"The Common External Tariff"

Readjustment of the Greek tariff to the Common External Tariff (CXT) of the ECC will be effected in three progressive stages for products on which Greek duties vis-a-vis the Community are to be wiped out in twelve years, and in four stages for products on which duties are to be eliminated in twenty-two years.

For products subject to the twelve-year transition period the initial readjustment takes place at the end of the third year from the effective date of the Agreement, at which time all Greek duty rates differing not more than 15% (plus or minus) from the corresponding rates of the CXT, will be equated with the CXT rates. On other rates the *difference* between the Greek Tariff and the CXT will be reduced by 30 percent. The second readjustment under this category takes place at the end of 7½ years from the effective date at which time the original difference will be further reduced by an additional 30 percent. The third and final readjustment comes at the end of the twelfth year at which time the Greek and CXT duty rates will be equated.

"Eliminating Quota Restrictions"

The Association Agreement aims at a complete liberalization of trade and the removal of quantitative restrictions on imports and exports alike as far as intra-community trade is concerned. The Community will extend to Greece, moreover, the arrangements obtaining among the Member States, with some exceptions for agriculture.

Agriculture

"Greek agricultural policy is to be harmonized with that of the Community at the latest by the end of the 22-year transition period; a consultation procedure is to be established to take into account, in the formation of the Community's policy, legitimate Greek interests for such products as tobacco.

"For many Greek agricultural products, the Community has extended to Greece the benefits already granted each other by the Member States, even before Greek agricultural policy is harmonized with that of the Community. The latter will, however, be able to apply safeguard clauses restricting imports of Greek citrus fruits, dessert grapes, peaches, wine, etc., should these rise beyond an agreed level in the period before harmonization has been carried out. At the same time, the Community has lowered its duties on Greek tobacco and raisins in advance of the normal timetable, and has established tariff quotas for Greek wine. The French and Italian state tobacco monopolies have also undertaken to increase their purchases from Greece."

Financial Aid

"During the first five years of the Agreement, Greece may obtain loans from the Community up to a total of $125 million, in accordance with the rules of the European Investment Bank."

The Association of Greece with the Common Market is an important factor in evaluating the competitive aspects of the Greek citrus industry.

Greek exports to EEC paid following duties as of November 15, 1964:

	Percentage of reduction below basic 1957 duties
1. Industrial products in general	60
2. Agricultural products of export interest to Greece:	
(a) Free of quotas	40
(b) Subject to quotas (such as apples in Germany)	45
3. Tobacco (end of 1965—70%)	60
Raisins	70
Oranges	40
Wines (tariff quotas)	
Germany 75,000 hectoliters table wines	
115,000 " industrial	
(communal duty—intermediate between German & CXT)	

U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C. 20250

OFFICIAL BUSINESS

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF AGRICULTURE

U S DEPARTMENT OF AGRICULTURE NEG. FOREIGN AGRICULTURAL SERVICE

☆ U.S. GOVERNMENT PRINTING OFFICE : 1966 O—210-822